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ABSTRACT

This study, which was conducted by a national consumer advocacy organization, examined the nutritional adequacy of the diets of elementary school children. The study also examined the nutritional adequacy of meals served in the National School Lunch Program (NSLP). The study determined that: (1) children consume too much fat, cholesterol, and sodium, and too few carbohydrates; and (2) children in households that are below 50 percent of the poverty level have an inadequate caloric intake, and inadequate intakes of vitamin A, calcium, and iron. It was found that the NSLP plays a major role in the diets of elementary school children. Children's nutrient intake from the NSLP was higher in fat and sodium and lower in carbohydrates than was children's average daily intakes. The study recommends that: (1) the U.S. Surgeon General undertake a children's nutrition campaign; (2) Congress mandate that federally subsidized children's meal programs conform to U.S. Dietary Guidelines; (3) the U.S. Department of Agriculture make lower fat and high fiber foods available to federally subsidized children's meal programs; and (4) the nutrition status of the nation's children be regularly monitored. (BC)

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HEADING FOR A HEALTH CRISIS: EATING PATTERNS OF AMERICA'S SCHOOL CHILDREN

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HEADING FOR A HEALTH CRISIS: EATING PATTERNS OF AMERICA'S SCHOOL CHILDREN

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EXECUTIVE SUMMARY

Introduction

The health of tomorrow's adults depends on the eating patterns of today's children. Compelling evidence indicates that childhood diets high in cholesterol and fat, especially saturated fat, increase the likelihood of heart disease later in life. Autopsy studies have shown that early coronary atherosclerosis or precursors of atherosclerosis often begin in childhood¹. Children with high blood cholesterol levels are more likely than the general population to have high levels as adults².

Yet today's children have high fat diets³, are heavier than a generation ago⁴, and one in four have high blood cholesterol levels⁵. Compared to children in many other countries, U.S. children have higher blood cholesterol levels and higher intakes of saturated fat and cholesterol⁶. These are all risk factors associated with heart disease.

Heart disease is the leading cause of death in the United States, accounting for more than 500,000 deaths annually. Another 1.25 million people suffer non-fatal heart attacks each year⁷. Low-income and minority populations suffer far higher mortality rates from heart disease than do higher income or white populations. The risk of death from heart disease is more than 25 percent higher for low income Americans than for the overall population⁸. Black Americans experience heart disease at substantially higher rates than white Americans⁹.

The Surgeon General of the United States, the National Academy of Sciences and the 1990 U.S. Dietary Guidelines have all recommended that persons two years of age and older consume no more than 30 percent of their daily calories from fat. They have recommended also that no more than 10 percent of daily calories be consumed in the form of saturated fats.

If children continue to consume high levels of fat, especially saturated fat, our nation is heading for a health crisis. As these children become adults many will unnecessarily suffer from heart disease and as a society we will bear the burden of paying the tremendous medical costs associated with treating the disease. It is estimated that the medical cost to treat heart disease each year is between \$41 and \$56 billion¹⁰.

This study was undertaken by Public Voice to determine the daily levels of fat, saturated fat, cholesterol, fiber and other nutrients consumed by children in different income groups. In addition, this study examined children's nutrient intake from the National School Lunch Program.

Methods

Using USDA's 1987/88 National Food Consumption Survey (NFCS), this study examined the nutritional adequacy of the diets of elementary school-age children 6 to 11 years. In addition, the study examined differences in nutrient intakes for children living different income groups. To measure adequacy, the study compared children's nutrient intakes to the 1990 U.S. Dietary Guidelines and/or the Recommended Dietary Allowances (RDAs).

The study also examined the nutritional adequacy of meals eaten by elementary school-age children in the National School Lunch Program (NSLP). This was measured by comparing children's nutrient intakes from school lunches to the 1990 U.S. Dietary Guidelines and/or one-third of the RDAs.

Only children completing all three days of the food record were included in the study. Three days provides a realistic picture of what children actually eat over time. In addition, the 1990 U.S. Dietary Guidelines state that the goals for optimal nutrient levels "apply to the diet over several days, not to a single meal or food."

USDA developed a weighting system to adjust the surveyed population to represent the U.S. population. This study used USDA's weighting system for children 20 years old and younger.

Because the survey had a high non-response rate, USDA cautioned that findings with a 25 percent or greater Coefficient of Variation (C.V.) may not be representative of the U.S. population. Therefore, a C.V. was determined for all of the study's analyses and included in the tables in the result section.

Unless a finding had a C.V. of 25 percent or greater, the results from this study represent America's elementary school-age children 6 to 11 years.

Results and Conclusions

Elementary school-age children, of all income groups, consume alarmingly high levels of fat, saturated fat and cholesterol. While our nation's poorest children are consuming too much fat, they are also at risk of not getting enough to eat and having inadequate intakes of vitamin A, calcium and iron.

Children's nutrient intake from the National School Lunch Program was found to be higher in fat, saturated fat and cholesterol than children's average daily intakes, which are already too high.

The major findings and conclusions of the study are:

I. Daily Nutrient Intake of Elementary School-Age Children

1. Elementary school-age children 6 to 11 years consume too much fat, saturated fat, cholesterol, and sodium and too few carbohydrates, especially fiber. Children's unhealthy eating patterns today will mean that, as adults, many will unnecessarily suffer from heart disease (See Table 1).

-- The vast majority of children (86.3%) obtained more than the recommended level of 30 percent of calories from fat. In addition, children's daily average fat intake was 36.4 percent of calories; 21 percent above the 30 percent recommended by the 1990 U.S. Dietary Guidelines.

-- The vast majority of children (91.6%) obtained more than the recommended 10 percent of calories from saturated fat. In addition, children's daily average intake of saturated fat was 14.1 percent of calories; 41 percent above the 10 percent recommended.

-- Children's daily average intake of cholesterol was 143.5mg per 1,000 calories; 43.5 percent higher than the recommended 100mg per 1,000 calories. The average cholesterol intake was highest (176.4mg per 1,000 calories) in the lowest income group of children. Even using the more conservative recommendation of 300 mg of cholesterol a day, nearly one-third of children (31.2%), on average, consumed more than this amount. In addition, half of the children (49.9%) in the poorest households had cholesterol intakes greater than 300mg.

-- The vast majority of children (85.9%) had sodium intakes that exceeded the NAS' "ideal" standard of 1,800mg. In addition, children's daily average sodium intake was 2,861 mg; exceeding the National Academy of Sciences (NAS) recommended upper limit of 2,400mg.

-- Children's daily average carbohydrate intake was only 49.7 percent of calories; substantially below the 55 percent recommended. The average intake for fiber, a

complex carbohydrate, was 11.5 grams; substantially below the 20 to 30 grams recommended by the National Cancer Institute. In addition, the vast majority of children (94.3%) had fiber intakes below recommended levels.

Table 1: Daily Nutrient Intake of Children 6 – 11 Years (1987/88)

Income Level	Percent of Calories From Fat	% of Children Consuming > 30% kcals From Fat	Percent of Calories From Sat. Fat	% of Children Consuming > 10% kcals From Sat. Fat	Cholesterol Mg per 1,000 Calories	Cholesterol % of Children Consuming > 300 mg
National Average	36.4	86.3	14.1	91.6	143.5	31.2
0 – 50% of Poverty	36.6	92.0	13.6	85.9	176.4	49.9
51 – 100% of Poverty	35.6	72.8	13.9	93.0	143	34.8
101 – 185% of Poverty	36.5	88.2	14.1	89.3	149.1	25.7
186 – 300% of Poverty	36.3	86.7	13.9	90.2	134.6	21.1
> 300% of Poverty	36.6	88.0	14.6	94.7	143.1	35.6

2. While our nation's poorest elementary school-age children (living in households at or below 50 percent of poverty) are consuming too much fat, saturated fat and cholesterol they are also not getting enough to eat. Undernourishment adversely effects a child's physical growth, resistance to infections and academic and behavioral performance in school.

-- The average caloric intake for these children was 1,606 calories, while the national average for children was 1,782 calories. This difference amounts to 176 calories per day or 1,232 calories a week. More importantly, one in three children (34.1%) in the poorest households did not obtain even two-thirds of the Recommended Dietary Allowances (RDA) for calories.

3. Our nation's poorest elementary school-age children (living in households at or below 50 percent of poverty) have inadequate intakes of vitamin A, calcium and iron. These nutrients are essential for the physical growth and mental development of children.

-- One in four children (26.7%) in the poorest households (0 to 50 percent of poverty) did not obtain even two-thirds of the RDA for vitamin A. (The RDA for children is 700 Retinol Equivalents). Only 14.6 percent of children in the nation as a whole had intakes of less than two-thirds of the RDA for vitamin A.

-- Three-fourths of the children (73.9%) in the poorest households had calcium intakes less than 100 percent of the RDA, while only one-third of children from higher income households consumed less than 100 percent of the RDA. (The RDA for calcium is 800 mg). In addition, a greater proportion of the poorest children did not obtain even two-thirds of the RDA for calcium in comparison to children in higher income groups. One in five children (21.1%) in the poorest households had calcium intakes less than two-thirds of the RDA, while the proportion of children in higher income groups ranged from 11.7 to 16.5 percent.

-- Half of the children (49.6%) in the poorest households consumed less than 100 percent of the RDA for iron. (The RDA for iron is 10mg). More importantly, 28.6 percent of these children did not even consume two-thirds of the RDA for iron. Less than 8 percent of children in higher income groups had iron intakes below this level.

II. Elementary School-Age Children's Nutrient Intake From the National School Lunch Program (NSLP)

1. The NSLP plays a major role in the diets of elementary school-age children; especially those living in poverty.

-- On average, 37.9 percent of lunches eaten by children were from the NSLP, with the highest concentration of participation from children with the lowest household incomes. Half of the lunches eaten (52.5%) by children living in poverty were from the NSLP, while only 28.1 percent of the lunches eaten by children in the highest income group were from the NSLP.

2. Children's nutrient intake from the NSLP is higher in fat, saturated fat, and sodium and lower in carbohydrates than children's average daily intakes; which are already too high (See Table 2).

-- On average, elementary school-age children's fat intake from the NSLP was 39.8 percent of calories as compared to their average daily fat intake of 36.4 percent of calories.

-- Children's average intake of saturated fatty acids from the NSLP was 16.5 percent of calories as compared to their average daily saturated fat intake of 14.1 percent of calories.

-- Children's average sodium intake from the NSLP was 1,099.7mg as compared to their one-third equivalent daily intake of 953.6mg.

-- Children's average carbohydrate intake from the NSLP was only 45.6 percent of calories as compared to their daily average intake of 49.7 percent of calories.

Table 2: A Comparison of Children's Daily Nutrient Intake to Their Intake From NSLP (1987/88)

Nutrient	Children's Intake From NSLP (% of Calories)	Children's Daily Intake (% of Calories)	Recommended Levels
Total Fat	39.8	36.4	30.0
Saturated Fat	16.5	14.1	10.0
Carbohydrates	45.6	49.7	55.0

Key Recommendations

► The U.S. Surgeon General should develop and undertake an aggressive children's nutrition campaign, similar to its anti-smoking campaign, to reduce the dangerously high intakes of fat, saturated fat and cholesterol in the diets of American children.

► Congress should mandate that all federally subsidized children's meal programs, especially the National School Lunch Program, conform to its own U.S. Dietary Guidelines of containing no more than 30 percent of calories from fat and no more than 10 percent of calories from saturated fat. Other children's meal programs are the School Breakfast Program, Summer Feeding Program, and Child Care Food Programs, including Headstart.

► Congress should mandate disclosure of nutrition information including fat, saturated fat, cholesterol, fiber, sodium and sugar for all meals in federally subsidized children's meal programs, especially the National School Lunch Program, as a condition for cost

reimbursement. Other programs are the School Breakfast Program, Summer Feeding Program, and the Child Care Food Programs, including Headstart. This information should be distributed to children, parents, guardians and teachers obtaining their meal from the program.

► USDA should expand the availability of lower fat dairy and meat commodities and high fiber fresh fruits, vegetables and whole grain commodities to all federally subsidized children's meal programs, especially the National School Lunch Program (NSLP). Other programs are the School Breakfast Program, Summer Feeding Program, and the Child Care Food Programs, including Headstart. Specifically, at least 10 percent of the cheese purchased by USDA for the NSLP should be lower fat varieties by the year 1995. These healthier commodities should also be provided to soup kitchens, food pantries and the Temporary Emergency Feeding Assistance Program (TEFAP) that many low-income families must rely on for nourishment. In addition Congress should require nutrition labeling on commodity foods distributed to the NSLP.

► Congress should mandate that FTC require nutrition and health claims in food advertising, especially ads directed toward children, be consistent with claims in food labeling.

► FDA and USDA should take immediate action to remove all barriers to the availability of lower fat products posed by federal standards of identity.

► The nutrition and health status of our nation's children should be monitored on a timely and regular basis. In addition, our nation's poorest children (those living in households at or below 50% of poverty) should be designated as a nutritionally vulnerable group and monitored regularly.

► The centerpiece of children's nutrition education programs should no longer be built around the Basic Four Food Groups. Rather, the focus should be on the U.S. Dietary Guidelines and the National Academy of Sciences' Food and Nutrition Board's nutrition guidelines.

► The American Medical Association should make all medical schools require a comprehensive course in nutrition and its relationship to health.

INTRODUCTION

The health of tomorrow's adults depends on the eating patterns of today's children. Compelling evidence indicates that childhood diets high in cholesterol and fat, especially saturated fat, increase the likelihood of heart disease later in life. Autopsy studies have shown that early coronary atherosclerosis or precursors of atherosclerosis often begin in childhood¹¹. Children with high blood cholesterol levels are more likely than the general population to have high levels as adults¹².

Yet today's children have high fat diets¹³, are heavier than a generation ago¹⁴, and one in four have high blood cholesterol levels¹⁵. Compared to children in many other countries, U.S. children have higher blood cholesterol levels and higher intakes of saturated fat and cholesterol¹⁶. These are all risk factors associated with heart disease.

Heart disease is the leading cause of death in the United States, accounting for more than 500,000 deaths annually. Another 1.25 million people suffer non-fatal heart attacks each year¹⁷. Low-income and minority populations suffer far higher mortality rates from heart disease than do higher income or white populations. The risk of death from heart disease is more than 25 percent higher for low income Americans than for the overall population¹⁸. Black Americans experience heart disease at substantially higher rates than white Americans¹⁹.

The Surgeon General of the United States, the National Academy of Sciences and the 1990 U.S. Dietary Guidelines have all recommended that persons two years of age and older consume no more than 30 percent of their daily calories from fat. They have recommended also that no more than 10 percent of daily calories be consumed in the form of saturated fats.

If children continue to consume high levels of fat, especially saturated fat, our nation is heading for a health crisis. As these children become adults many will unnecessarily suffer from heart disease and as a society we will bear the burden of paying the tremendous medical costs associated with treating the illness. It is estimated that the medical cost to treat heart disease each year is between \$41 and \$56 billion²⁰.

METHODS

The Study's Design

The study was designed to determine the nutritional adequacy of the diets of elementary school-age children. In addition, the study examined if there were differences in nutrient intakes for children living in households with different incomes. To measure adequacy, the study compared children's nutrient intakes to recommended levels (For more detail see section on analysis of children's nutrient intake).

The study also examined the nutritional adequacy of meals eaten by children in the National School Lunch Program (NSLP). This was measured by determining children's nutrient intakes from school lunches and comparing them with recommended levels (For more detail see section on analysis of nutrient content of the NSLP as Consumed by Children).

The Study's Data Source

USDA's 1987/88 National Food Consumption Survey (NFCS) was the study's database. Conducted every 10 years, the NFCS is the most comprehensive data source available on the food and nutrient intake of the U.S. population.

The dataset provides data on one and three days of food and nutrient intakes by individuals of all ages surveyed in the 48 conterminous States. Data collection began in April 1987 and was completed in August 1988. Individuals who participated in the survey were asked to provide three consecutive days of dietary data.

Selected Age Group

Elementary school-age children ages 6 to 11 years were selected as the group to study. These children are forming their eating behaviors and parents are more likely to have a positive influence on their food selection.

Analysis of Children's Nutrient Intake

Although the NFCS collects one and three day nutrient intake data, only the three day data was used. The three day intake data provides a more accurate picture of what children are actually eating over time. In addition, the 1990 U.S. Dietary Guidelines state that the goals for optimal nutrient levels "apply to the diet over several days, not to a single meal or food."

All children were classified by household income. Five income groups were created: 0 to 50 percent of poverty, 51 to 100 percent of poverty, 101 to 185 percent of poverty, 186 to 300 percent of poverty, and greater than 300 percent of poverty. This detailed income breakdown was undertaken to determine if there were differences in the nutrient intake of children in household groups that are extremely poor, poor, near poor, middle income, or high income.

A comparative analysis of the age and sex of children in the five different income groups was conducted. It was assumed that age and sex differences by income groups could bias the results. The mean age for all income groups was similar; ranging from 8.3 to 8.79 years (See Table 3). In addition, there was equal distribution of males and females in all income groups (See Table 3).

Table 3: Age & Sex of Children by Income Groups

Income Level	Age Mean	Sex	
		% of Females	% of Males
0 - 50% of Poverty	8.41	50	50
51 - 100% of Poverty	8.79	46	54
101 - 185% of Poverty	8.22	47	53
186 - 300% of Poverty	8.37	47	53
> 300% of Poverty	8.30	49	51

The NFCS' "Type 40" records were used to analyze the nutrient intake of children. A mean, standard deviation and coefficient of variation were derived for the following nutrients: calories, protein, total fat, saturated fat, monounsaturated fat, polyunsaturated fat, cholesterol, carbohydrates, fiber, vitamin A, vitamin C, thiamin, riboflavin, niacin, folate, calcium, iron and sodium. Percent of calories was derived for total fat, saturated fat, monounsaturated fat, polyunsaturated fat, and carbohydrates. Percent of children consuming less than two-thirds of the RDA were derived for all vitamins, minerals and trace minerals included in the study.

The Recommended Dietary Allowances 10th Edition provided the major basis for the determination of nutrient adequacy. In evaluating adequacy, the national average and the different income groups averages for most macronutrients and all vitamins, minerals and trace elements were compared with their respective RDA. The percent of children not obtaining two-thirds of an RDA was also used to gage adequacy. Evaluating caloric intake was examined for both under and over consumption because of the health consequences of not getting enough to eat or getting too much to eat. Therefore, two analyses were conducted: 1) determined the percent of children obtaining less than two-thirds of the RDA for calories and 2) determined the percent of children consuming more than 100 percent of the RDA.

In addition to RDAs, the 1990 U.S. Dietary Guidelines were used to measure adequacy for total fat, saturated fat, monounsaturated fat, and polyunsaturated fat.

All of the analysis was weighted using USDA's three day weight variable for children less than 20 years. Table 4 provides the unweighted and weighted sample size of children surveyed.

Table 4: USDA's Sample Population

Income Level	Weighted	Unweighted
National Average	21,383	818
0 - 50% of Poverty	1,655	56
51 - 100% of Poverty	2,909	117
101 - 185% of Poverty	5,160	217
186 - 300% of Poverty	4,247	212
> 300% of Poverty	7,412	216

Analysis of the Nutrient Content of the NSLP as Consumed by Children

The NFCS' "Type 30" records were used to analyze the nutrient content of meals consumed by children through the National School Lunch Program (NSLP). Only children who ate three lunches through the NSLP were included in the analysis.

A mean, standard deviation and coefficient of variation were derived for the following nutrients: calories, protein, total fat, saturated fat, monounsaturated fat, polyunsaturated fat, cholesterol, carbohydrates, fiber, vitamin A, vitamin C, thiamin, riboflavin, niacin, folate, calcium, iron and sodium. Percent of calories was derived for total fat, saturated fat, monounsaturated fat, polyunsaturated fat, and carbohydrates.

Adequacy of the nutrient content of school lunches as consumed by elementary school-age children was measured by using one-third of the Recommended Dietary Allowances 10th Edition and the 1990 U.S. Dietary Guidelines. (It was assumed that a lunch provides one-third of children's needed nutrient intakes). Children's average intakes from school lunches for most macronutrients and all vitamins, minerals and trace elements were compared with one-third of their respective RDA. The U.S. Dietary Guidelines also were used to evaluate total fat, saturated fat, monounsaturated fat, and polyunsaturated fat.

All of the analysis was weighted using USDA's three day weight variable for children less than 20 years. The unweighted sample size was 911 school lunches and the weighted size was 6,709.

Extrapolation of Sample to U.S. Population of Elementary School-Age Children

USDA developed a weighting system to adjust the surveyed population to represent the U.S. population. This study used USDA's weighting system for children 20 years and younger.

Because the survey had a high non-response rate, USDA cautioned that findings with a 25 percent or greater Coefficient of Variation (C.V.) may not be representative of the U.S. population. Therefore, a C.V. was determined for all of the study's analyses and included in the tables in the result section.

Unless a finding had a C.V. of 25 percent or greater, the results of this study represent elementary school-age children 6 to 11 years living in the United States.

RESULTS

Where Elementary School Age Children Eat Meals

Breakfast

Children eat the vast majority of breakfasts at home. An average of nine out of ten breakfasts (90.5%) were eaten at home. In addition, as household income increases the proportion of breakfasts eaten at home increases. Eighty percent of breakfasts were eaten at home by children in households with the lowest income, while 95 percent of breakfasts were eaten at home by children in the highest income group (See Table 5).

For children living in households with incomes at or below poverty, the National School Breakfast Program (NSBP) plays a major role in their diets. Fifteen percent of breakfasts eaten by the poorest children are from the NSBP and 10 percent of breakfasts eaten by children in households at 51 to 100 percent of poverty are from the NSBP (See Table 5).

Table 5: Where Children Eat Breakfast

Source	Income Level (% of Poverty)					
	National Average	0 - 50%	51 - 100%	101 - 185%	186 - 300%	> 300%
Home	90.5	79.4	84.4	90.1	92.0	95.4
School breakfast	4.8	14.5	10.1	4.5	4.2	0.6
At Someone Else's Home	2.4	5.4	2.3	2.5	2.3	1.8
Fast Food/Restaurants	1.0	—	1.2	1.5	0.5	0.9
Other	1.2	0.6	2.0	1.7	1.1	0.9

Lunch

The National School Lunch Program (NSLP) provides nourishment to a substantial number of children; especially low income children. On average, 37.9 percent of lunches eaten by children are from the NSLP. In addition, the highest concentration of school lunches eaten are from children with the lowest household incomes. About half of the lunches eaten by the lowest two income groups were from the NSLP, while only about one-quarter of the lunches eaten by children in the highest income group were from the NSLP (See Table 6).

A substantial number of children eat lunches at home. On average, 41.2 percent of the lunches eaten by children were at home. The proportion of lunches eaten at home varied by income groups from 31.2 to 44.6 percent (See Table 6).

Only a minority of lunches consumed were prepared at home and eaten at school. The higher the income group the greater the proportion of children bringing their lunches to school. Fifteen percent of lunches eaten in the two highest income groups were brought from home and eaten at school. None of the lunches children consumed by the poorest households and only 2.5 percent of the lunches consumed in households living between 51 and 100 percent of poverty were brought from home and eaten at school (See Table 6).

Table 6: Where Children Eat Lunch

Source	Income Level (% of Poverty)					
	National Average	0 - 50%	51 - 100%	101 - 185%	186 - 300%	> 300%
Home	41.2	45.8	31.2	39.9	44.6	43.1
School Lunch Program	37.9	49.0	54.3	42.2	32.5	28.1
At Someone Else's Home	2.5	3.3	2.2	2.9	1.3	3.3
Fast Food/Restaurants	5.5	1.9	8.5	4.4	4.0	7.4
Bag Lunches	10.5	—	2.5	7.1	15.8	15.4
Other	2.3	—	1.3	3.6	1.8	2.7

Dinner

Children eat the overwhelming majority of their dinners at home. On average, 85.9 percent of dinners eaten by children were at home. The greatest proportion of dinners eaten at home were from the poorest households. Ninety-three percent of the dinners eaten by children in the poorest households were at home, while between 83 and 88 percent of the dinners eaten in the higher income groups were at home (See Table 7).

Dinners eaten at restaurants, including fast food establishments are extremely small. Only 7.1 percent of all dinners eaten by children were from restaurants (See Table 7). As household income increases, a greater proportion of children's are eaten at restaurants. Only 2.2 percent of the dinners eaten by the poorest children were at restaurants, while 9.1 percent of the dinners eaten by children in the highest income group were at restaurants (See Table 7).

Table 7: Where Children Eat Dinner

Source	Income Level (% of Poverty)					
	National Average	0 - 50%	51 - 100%	101 - 185%	186 - 300%	> 300%
Home	85.9	93.4	88.0	82.6	87.5	84.3
At School	1.0	0.5	1.4	1.2	1.2	0.6
At Someone Else's Home	4.6	2.8	4.6	5.6	3.8	5.0
Fast Food/Restaurants	7.1	2.2	5.7	7.8	6.4	9.1
Other	2.2	1.1	0.3	2.9	1.0	1.0

Daily Nutrient Intake of Elementary School-Age Children

Daily Caloric Intake

The poorest ((0-50% of poverty) elementary school-age children consume substantially fewer calories than children in higher income groups. The daily average caloric intake for the poorest children was 1,606 calories, while children in higher income groups had average intakes between 1,743 to 1,826 calories (See Table 8). This difference amounts to 137 to 220 calories per day or between 959 to 1,540 calories a week.

In addition, one out of every three children (34.1%) in the poorest households does not obtain even two-thirds of the Recommended Dietary Allowances (RDA) for calories. In contrast, only between 11.9 and 21.6 percent of children in higher income groups obtained less than two-thirds of the RDA for calories (See Table 8).

Half as many children in the poorest households consume more than 100 percent of the RDA for calories as do children in the other income groups. The RDA for children ages 6-11 is 2,000 calories. Only 15.6 percent of the poorest children had caloric intakes greater than recommended levels, while between 28.4 and 31.8 percent of children in the higher income groups had caloric intakes greater than 100 percent of the RDA (See Table 8).

Except for the poorest households, children from the other income groups consume similar levels of calories. Average intakes for these four income groups ranged from 1,742.6 to 1,826.0 calories (See Table 8).

Table 8: Daily Caloric Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (calories)	Standard Deviation	Coefficient of Variation (percent)	Less than 2/3 of RDA	More than 100% of RDA
National Average	1,782.0	529.4	1.0	18.5	28.7
0 – 50% of Poverty	1,606.4	436.6	3.6	34.1	15.6
51 – 100% of Poverty	1,814.9	478.0	2.4	11.9	31.8
101 – 185% of Poverty	1,826.0	598.9	2.2	16.1	30.0
186 – 300% of Poverty	1,742.6	516.0	2.0	21.6	30.4
> 300% of Poverty	1,800.3	522.1	2.0	17.6	28.4

Daily Total Fat Intake

Elementary school-age children, from all income groups, consume too much fat. On average, children's daily fat intake was 36.4 percent of calories; substantially above the 30 percent recommended by the RDA and the 1990 U.S. Dietary Guidelines. In addition, the average percent of calories from fat for all income groups is similar; ranging from 35.6 to 36.6 percent (See Table 9).

The overwhelming majority of children (86.3%) have fat intakes that exceed the recommended 30 percent of calories. The extremely high proportion of children consuming too much fat is similar for all income groups; ranging from 72.8 percent to 92.0 percent (See Table 9).

Table 9: Daily Total Fat Intake of Children 6 - 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	Percent of Calories From Fat	% of Children Consuming > 30% kcal From Fat
National Average	72.0	24.8	1.2	36.4	86.3
0 - 50% of Poverty	65.3	22.0	4.5	36.6	92.0
51 - 100% of Poverty	71.8	23.3	3	35.6	72.8
101 - 185% of Poverty	74.0	27.3	2.5	36.5	88.2
186 - 300% of Poverty	70.3	23.9	2.3	36.3	86.7
> 300% of Poverty	73.2	24.3	2.3	36.6	88.9

Daily Saturated Fat Intake

Similar to total fat, intakes of saturated fats are too high in elementary school-age children. On average, children's daily consumption of saturated fat is 14.1 percent of calories; substantially above the 10 percent recommended by the RDA and the 1990 U.S. Dietary Guidelines. The average percent of calories from saturated fat for all income groups is similar; ranging from 13.6 to 14.6 percent (See Table 10).

In addition, the overwhelming majority of children in all income groups consume saturated fat at levels that exceed the upper limit recommended. Saturated fat intakes for nine out of every ten children (91.6%) was higher than the recommended 10 percent of calories (See Table 10).

Table 10: Daily Saturated Fatty Acid Intake of Children 6 - 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	Percent of Calories From Sat. Fat	% of Children Consuming > 10% cals From Sat. Fat
National Average	28	10.6	1.3	14.1	91.6
0 - 50% of Poverty	24.3	9.1	5.0	13.6	85.9
51 - 100% of Poverty	28.0	10.0	3.3	13.9	93.0
101 - 185% of Poverty	28.6	11.2	2.7	14.1	89.3
186 - 300% of Poverty	26.9	10.0	2.6	13.9	90.2
> 300% of Poverty	29.1	10.9	2.5	14.6	94.7

Daily Monounsaturated Fat Intake

Similar to total fat and saturated fat, children consume too much monounsaturated fat. On average children's daily intake of monounsaturated fat was 13.4 percent of calories; substantially above the 10 percent recommended. In addition, the average percent of calories from monounsaturated fat for all income groups is similar; ranging from 13.1 to 14.2 percent (See Table 11).

The overwhelming majority of children's monounsaturated fat intakes in all income groups exceed the recommended upper limit. On average, nine out of every ten children have monounsaturated fat intakes that are higher than the recommended 10 percent of calories (See Table 11).

Table 11: Daily Monounsaturated Fatty Acid Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	Percent of Calories From Mono. Fat	% of Children Consuming > 10% kcal From Mono. Fat
National Average	26.6	9.1	1.2	11.3	92.0
0 – 50% of Poverty	25.3	8.5	4.5	14.2	98.4
51 – 100% of Poverty	26.5	8.5	3.0	13.1	83.6
101 – 185% of Poverty	27.4	10.2	2.5	13.5	90.4
186 – 300% of Poverty	26.1	8.8	2.3	13.5	90.8
> 300% of Poverty	26.8	8.9	2.3	13.4	95.8

Daily Polyunsaturated Fat Intake

In sharp contrast to total fat and the other fat components, children's polyunsaturated fatty acid intake is substantially below the 10 percent recommended. On average, children consumed only 5.2 percent of their calories from polyunsaturated fat. The average percent of calories from polyunsaturated fat for all income groups is similar; ranging from 4.5 to 6.2 percent (See Table 12).

In addition, nearly all elementary school-age children consume less than the 10 percent recommended limit. On average, only 2.8 percent of children had intakes greater than 10 percent of calories from polyunsaturated fat; with income group averages ranging from 1.0 to 6.2 percent (See Table 12).

Table 12: Daily Polyunsaturated Fatty Acid Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	Percent of Calories From Poly. Fat	% of Children Consuming > 10% kcal From Poly. Fat
National Average	12.0	5.2	1.5	6.1	2.8
0 – 50% of Poverty	10.5	4.5	5.7	5.9	3.0
51 – 100% of Poverty	11.9	5.0	3.9	5.9	1.0
101 – 185% of Poverty	12.6	6.2	3.3	6.2	6.2
186 – 300% of Poverty	12.1	5.0	2.8	6.2	2.7
> 300% of Poverty	11.9	4.6	2.6	6.0	1.2

Daily Cholesterol Intake

While the average cholesterol intake for children is below the 300 milligrams (mg) recommended, it is higher than the American Heart Association's guideline of 100 mg per 1000 calories. Children's average daily intake of cholesterol was 143.5mg per 1,000 calories. The average consumption of cholesterol was highest (176.4mg/1,000 calories) in the lowest income group of children. Cholesterol intakes were similar in all other income groups ranging from 134.6mg to 149.1mg per 1,000 calories (See Table 13).

Even using the recommended 300 mg as the acceptable standard, nearly one-third of children, on average, consumed more than this amount. In addition, one out of every two children (49.9%) in households with the lowest income had cholesterol intakes greater than 300mg. The percentage of children in the other income groups with cholesterol intakes above 300mg ranged from 21.1 to 35.6 percent (See Table 13).

Table 13: Daily Cholesterol Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	Mg per 1,000 Calories	% of Children Consuming > 300 mg
National Average	255.8	124.8	1.7	143.5	31.2
0 – 50% of Poverty	283.3	148.6	7.0	176.4	49.9
51 – 100% of Poverty	259.6	116.3	4.1	143.0	34.8
101 – 185% of Poverty	272.2	134.5	3.4	149.1	25.7
186 – 300% of Poverty	234.5	108.4	3.2	134.6	21.1
> 300% of Poverty	257.7	121.6	3.2	143.1	35.6

Daily Protein Intake

Elementary school-age children consume nearly two and one-half times the RDA for protein. Children's average daily protein intake was 68.1 grams; substantially above the RDA of 28 grams. In addition, the average protein intake for all income groups is similar; ranging from 65.5 grams to 72.6 grams (See Table 14).

Almost every child, in all income groups, consumes more than 100 percent of the RDA for protein. Between 96.5 and 100 percent of children in the different income groups had protein levels that exceeded the RDA (See Table 14).

Table 14: Daily Protein Intake of Children 6 - 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming > 100% of RDA
National Average	68.1	21.2	1.1	98.5
0 - 50% of Poverty	66.0	18.5	3.7	99.0
51 - 100% of Poverty	72.6	21.0	2.7	96.5
101 - 185% of Poverty	68.8	22.8	2.2	100.0
186 - 300% of Poverty	65.5	21.0	2.2	98.1
> 300% of Poverty	68.0	20.6	2.1	98.4

Daily Carbohydrate Intake

Children's consumption of carbohydrates is too low. On average children obtain 49.7 percent of their calories from carbohydrates; substantially below the 55 percent recommended. In addition, the average percent of calories from carbohydrates for all income groups is similar; ranging from 48.0 to 50.1 percent (See Table 15).

Table 15: Daily Carbohydrate Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	Percent of Calories
National Average	221.3	69.4	1.1	49.7
0 – 50% of Poverty	192.6	50.4	3.5	48.0
51 – 100% of Poverty	225.7	59.3	2.4	49.7
101 – 185% of Poverty	227.8	78.1	2.3	49.9
186 – 300% of Poverty	218.1	65.8	2.1	50.1
> 300% of Poverty	223.3	70.6	2.2	49.6

Daily Fiber Intake

Fiber, a complex carbohydrate, is consumed by children in extremely small quantities. On average, children's fiber intake was 11.5 grams; substantially below the 20 to 30 grams recommended by the National Cancer Institute. In addition, fiber intake for all income groups is similar; ranging from 10.6 to 12.7 (See Table 16).

Only a very small proportion of children consume the recommended level of 20 grams or more of fiber. On average, only one out of every 20 children have fiber intakes higher than the recommended 20 grams (See Table 16). In addition, children in the two highest income groups have the lowest fiber intakes.

Table 16: Daily Fiber Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (grams)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 20 grams of Fiber
National Average	11.5	5.0	1.5	94.3
0 – 50% of Poverty	10.7	6.0	7.5	89.7
51 – 100% of Poverty	12.7	5.3	3.9	92.3
101 – 185% of Poverty	12.4	4.8	2.6	90.8
186 – 300% of Poverty	11.5	5.1	3.0	95.7
> 300% of Poverty	10.6	4.4	2.8	97.6

Daily Vitamin A Intake

Vitamin A intake for children in the poorest households (0-50% of poverty) is substantially lower than children in higher income groups. The average daily vitamin A intake for the poorest children was 25.6 percent lower (701.2 Retinol Equivalents (RE)) than the national average (942.9 RE). Except for the poorest households, children from the other income groups consume similar levels of vitamin A. Intakes for these four income groups are higher than the RDA (700 RE) and ranged from 901.0 to 1,007.6 RE (See Table 17).

One out of every four (26.7%) children in the poorest households does not obtain even two-thirds of the Recommended Dietary Allowances (RDA) for vitamin A. The RDA for children is 700 RE. In contrast, only between 10.4 and 17.3 percent of children in higher income groups obtained less than two-thirds of the RDA for vitamin A (See Table 17).

Table 17: Daily Vitamin A Intake of Children 6 - 11 Years (1987/88)

Income Level	Mean (RE)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	942.9	544.8	2.0	14.6
0 - 50% of Poverty	701.2	322.9	6.2	26.7
51 - 100% of Poverty	1,007.6	586.7	5.4	14.6
101 - 185% of Poverty	901.0	442.2	3.3	10.4
186 - 300% of Poverty	974.2	572.4	4.0	17.3
> 300% of Poverty	982.7	596.9	4.1	13.4

Daily Vitamin C Intake

The average vitamin C intake for children is nearly twice recommended levels. Children's daily consumption on average is 87.1 mg. The RDA for vitamin C is 45 mg. In addition, about 10 percent or less of children in all income groups consumed less than two-thirds of the RDA for vitamin C (Table 18).

Table 18: Daily Vitamin C Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	87.1	56.1	2.3	9.3
0 – 50% of Poverty	68.1	39.1	7.7	11.5
51 – 100% of Poverty	86.3	55.7	6.0	3.5
101 – 185% of Poverty	97.5	63.4	4.4	10.5
186 – 300% of Poverty	88.0	52.2	4.1	7.0
> 300% of Poverty	84.0	54.6	4.4	11.6

Daily Thiamin Intake

Children's average daily intake for thiamin of 1.4mg is well above the RDA of 1.0mg. No income group's average intake was below the recommended level. In addition, less than 10 percent of children in the different income groups obtained less than two-thirds of the RDA for thiamine (Table 19).

Table 19: Daily Thiamin Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	1.4	0.5	1.2	4.6
0 – 50% of Poverty	1.3	0.4	4.1	1.0
51 – 100% of Poverty	1.5	0.4	2.5	3.3
101 – 185% of Poverty	1.5	0.5	2.3	0.9
186 – 300% of Poverty	1.4	0.5	2.5	4.7
> 300% of Poverty	1.4	0.5	1.4	8.6

Daily Riboflavin Intake

Children's average daily riboflavin intake of 2.0mg is substantially above the RDA (1.2mg). No income group's average was below the recommended level. In addition, no more than five percent of children in any of the different income groups consumed less than two-thirds of the RDA for riboflavin (Table 20).

Table 20: Daily Riboflavin Intake of Children 6 - 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	2.0	0.7	1.2	1.8
0 - 50% of Poverty	1.7	0.6	4.7	1.0
51 - 100% of Poverty	2.1	0.7	3.1	5.1
101 - 185% of Poverty	2.0	0.7	2.4	2.4
186 - 300% of Poverty	1.9	0.7	2.5	1.5
> 300% of Poverty	2.1	0.8	2.6	0.5

Daily Niacin Intake

The average daily niacin intake of 18.1mg for children is substantially above the RDA (13mg). No income group's average was below the recommended level. In addition, no more than five percent of children in any of the income groups consumed less than two-thirds of the RDA for niacin (Table 21).

Table 21: Daily Niacin Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	18.1	6.2	1.2	2.5
0 – 50% of Poverty	16.7	4.5	3.6	3.0
51 – 100% of Poverty	20.6	7.3	3.3	4.6
101 – 185% of Poverty	18.3	6.3	2.3	1.6
186 – 300% of Poverty	17.6	6.0	2.3	4.4
> 300% of Poverty	17.4	5.6	2.2	1.1

Daily Folate Intake

Children's average daily intake for folate is nearly twice recommended levels. Children consumed an average of 228.8mg. The RDA for folate is 100mg. In addition, no more than three percent or less of children in all income groups consumed less than two-thirds of the RDA for folate (Table 22).

Table 22: Daily Folate Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	228.8	106.3	1.6	0.5
0 – 50% of Poverty	216.7	102.1	6.3	0.0
51 – 100% of Poverty	259.2	107.8	3.8	2.9
101 – 185% of Poverty	241.6	115.1	3.2	0.0
186 – 300% of Poverty	213.4	83.5	2.7	0.4
> 300% of Poverty	219.5	108.4	3.4	0.2

Daily Calcium Intake

The average calcium intake for elementary school-age children in the poorest households (0-50% of poverty) is substantially lower than children in higher income groups. The poorest children consumed an average of 718.7mg, while the national average for all children was 937.2mg. This is 23.3 percent difference. In addition, the average calcium intake for the poorest children is below the RDA of 800mg. Other than the poorest households, children from the other income groups consume similar levels of calcium. Intakes for these four income groups are higher than the RDA and ranged from 894.2mg to 1,003.8mg (See Table 23).

Three fourths of the children (73.9%) in the poorest households had calcium intakes less than 100 percent of the RDA, while only one-third of the children from higher income households consumed less than 100 percent of the RDA. In addition, a greater proportion of the poorest children do not obtain even two-thirds of the RDA for calcium in comparison to children in higher income groups. One in five children (21.1%) in the poorest households had calcium intakes less than two-thirds of the RDA, while between 11.7 and 16.5 percent of children in the higher income groups had intakes less than two-thirds of the RDA for calcium (See Table 23).

Table 23: Daily Calcium Intake of Children 6 - 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 100% of RDA	% of Children Consuming < 2/3 of RDA
National Average	937.2	423.8	1.6	40.3	14.2
0 - 50% of Poverty	718.7	304.2	5.7	73.9	21.1
51 - 100% of Poverty	894.2	332.8	3.4	33.3	15.7
101 - 185% of Poverty	962.0	417.8	2.9	38.6	11.7
186 - 300% of Poverty	905.4	368.5	2.8	36.3	16.5
> 300% of Poverty	1,003.8	487.8	3.3	39.0	12.6

Daily Iron Intake

The average iron intake for all income groups is at or above the RDA (10mg) for children. However, a high proportion of children in the poorest households obtain less than recommended levels. One out of two children (49.6%) in the poorest households consumed less than 100 percent of the RDA. More importantly, 28.6 percent of these children did not even consume two-thirds of the RDA for iron. This is four times more children than in any other income group (Table 24).

Table 24: Daily Iron Intake of Children 6 – 11 Years (1987/88)
(based on three day intake)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming < 2/3 of RDA
National Average	12.4	5.1	1.4	7.8
0 – 50% of Poverty	10.4	4.1	5.3	28.6
51 – 100% of Poverty	13.6	4.7	3.2	7.3
101 – 185% of Poverty	13.3	6.0	3.1	6.3
186 – 300% of Poverty	12.0	4.8	2.7	6.6
> 300% of Poverty	12.0	4.7	2.7	5.0

Daily Sodium Intake

Children's average daily intake of sodium exceeds recommended levels. While there is no RDA for sodium, the National Academy of Sciences recommends that sodium consumption be limited to 2,400mg and ideally less than 1,800mg. No income group had average sodium intakes less than the recommended maximum cutoff of 2,400mg. Averages ranged from 2,578mg to 3,036mg (See Table 25).

Not only are group averages higher than recommended, but the vast majority of children in every income group has sodium intakes that exceed the "ideal" standard of 1,800mg. Between 74.5 and 91.5 percent of children in the various income groups consumed more than 2,000mg of sodium. Fewer children in the poorest income group had sodium intakes greater than 2,000mg than children in the higher income groups (Table 25).

Table 25: Daily Sodium Intake of Children 6 – 11 Years (1987/88)

Income Level	Mean (mg)	Standard Deviation	Coefficient of Variation (percent)	% of Children Consuming > 2000 mg
National Average	2,861.4	911.2	1.1	85.9
0 – 50% of Poverty	2,578.2	767.1	4.0	74.5
51 – 100% of Poverty	3,036.6	1,006.7	4.4	91.5
101 – 185% of Poverty	2,986.2	1,061.8	2.4	86.8
186 – 300% of Poverty	2,889.3	904.9	2.2	86.5
> 300% of Poverty	2,753.1	784.0	1.9	85.4

Elementary School-Age Children's Nutrient Intake from School Lunches

Caloric Intake

Children's average caloric intake from school lunches is within the range of the program's goal. Recommended levels are 650 calories and elementary school-age children's average intake was 642.3 calories (See Table 26).

Total Fat

Elementary school-age children's fat intake from school lunches greatly exceeds recommended levels and is higher than children's daily average intake. On average, children's fat intake from school lunches was 39.8 percent of calories; substantially above the recommended 30 percent of calories from fat (See Table 26). In addition, children's daily average fat intake was 36.4 percent of calories.

Saturated Fat Intake

Children's average intake from school lunches of saturated fatty acids are above recommended levels and higher than children's average daily intake. On average, elementary school-age children consumed 16.5 percent of calories from saturated fat from school lunches; substantially above the recommended 10 percent of calories from saturated fat (See Table 26). In addition, children's daily average intake was 14.1 percent of calories.

Monounsaturated Fat Intake

Similar to total fat and saturated fat, children's consumption of monounsaturated fat from school lunches is above recommended levels. Children's average monounsaturated fat intake from school lunches was 14.7 percent of calories; substantially above the 10 percent recommended (See Table 26).

Polyunsaturated Fatty Acid Intake

In sharp contrast to total fat and the other fat components, children's intake of polyunsaturated fatty acid from school lunches is substantially below the recommended upper limit of 10 percent of calories. On average, children obtained only 5.7 percent of calories from polyunsaturated fat (See Table 26).

Protein Intake

The average protein intake children consume from school lunches is more than two and one-half times (2.76) recommended levels. Children's average protein intake was 25.76 grams, while recommended levels are 9.3 grams.

Carbohydrate and Fiber Intakes

Children's consumption of carbohydrates from school lunches is below recommended levels. The average child's intake of carbohydrates is only 45.6 percent of calories; substantially below the 55 percent recommended (See Table 26).

In particular, fiber, a complex carbohydrate, is extremely low in meals children eat in the school lunch program. Children's fiber intake from school lunches averaged 5.4 grams; substantially below the 7 to 10 grams recommended by the National Cancer Institute (See Table 26).

Table 26: Children's Daily Macronutrient Intake From NSLP

Nutrient	Average Intake (g)	Standard Deviation	Actual Percent of Calories	Recommended Percent of Calories
Calories	642.3	264.7	—	—
Protein	25.7	11.3	16.0	15.0
Fat (g)	28.4	14.3	39.8	30.0
SFA (g)	11.8	5.5	16.5	10.0
MUSFA (g)	10.5	5.4	14.7	10.0
PUSFA (g)	4.1	4.0	5.7	10.0
Carbohydrates	73.2	32.5	45.6	55.0
Fiber	5.4	3.7	—	—

Vitamin A Intake

Children's average vitamin A intake from school Lunches is higher than the recommended level. The average intake was 301.2 Retinol Equivalents (RE), while the recommended level is 233.3 RE (See Table 27).

Vitamin C Intake

Children consume higher amounts of vitamin C from school lunches than the recommended level. Children's average intake from school lunches was 21.1mg, while the recommended level is 15mg (See Table 27).

Thiamin Intake

The average thiamin intake for children from school lunches is well above the recommended level. Children consumed an average of 0.43mg of thiamin from school lunches, while the recommended level is 0.33mg (See Table 27).

Riboflavin Intake

Children consume higher levels of riboflavin from school lunches than recommended. The average riboflavin intake for children from school lunches is 0.68mg, while 0.4 is the recommended level (See Table 27).

Niacin Intake

Children's average niacin intake from school lunches is greater than recommended levels. The average niacin intake was 5.2mg, while the recommended level is 4.33mg (See Table 27).

Folate Intake

Children consume nearly twice as much folate from school lunches as recommended. The average folate intake for children from school lunches was 61.3 micrograms (ug), while the recommended level is 33.3ug (See Table 27).

Calcium Intake

Children's consumption of calcium from school lunches is more than one and one-half times higher than the recommended level. The average calcium intake was 409.8mg, while the recommended level is 266.7mg (See Table 27).

Iron Intake

Children's average iron intake from school lunches is similar to the recommended level. The average iron intake from school lunches was 3.55mg and the recommended level is 3.33mg (See Table 27).

Sodium Intake

Children's consumption of sodium from school lunches was nearly one and one-half times the recommended level. Children's average sodium intake from school lunches was 1,099.7mg, while the recommended level is between 600 and 800mg (See Table 27).

Table 27: Children's Daily Micronutrient Intake From NSLP

Nutrient	Recommended Level	Mean Intake	Standard Deviation
Vit. A	233.3 RE	301.2 RE	409.40
Vit. C	15 mg	21.1 mg	21.40
Thiamine	0.33 mg	0.43 mg	1.20
Riboflavin	0.4 mg	0.68 mg	0.25
Niacin	4.33 mg	5.21 mg	2.88
Folate	33.3 ug	61.26 ug	37.40
Calcium	266.7 mg	409.8 mg	177.90
Iron	3.33 mg	3.55 mg	1.99
Sodium	600 - 800 mg	1,099.7 mg	626.90

CONCLUSIONS

Elementary school-age children, of all income groups, consume alarmingly high levels of fat, saturated fat and cholesterol. While our nation's poorest children are consuming too much fat, they are also at risk of not getting enough to eat and having inadequate intakes of vitamin A, calcium and iron.

Children's nutrient intake from the National School Lunch Program was found to be higher in fat, saturated fat and cholesterol than children's average daily intakes, which are already too high.

The major conclusions of the study are:

I. Daily Nutrient Intake of Elementary School-Age Children

1. Elementary school-age children 6 to 11 years consume too much fat, saturated fat, cholesterol, and sodium and too few carbohydrates, especially fiber. Children's unhealthy eating patterns today will mean that, as adults, many will unnecessarily suffer from heart disease.

-- Children's daily average fat intake was 36.4 percent of calories; 21 percent above the 30 percent recommended by the 1990 U.S. Dietary Guidelines. In addition, the vast majority of children (86.3%) obtained more than 30 percent of calories from fat.

-- Children's daily average intake of saturated fat was 14.1 percent of calories; substantially above the 10 percent recommended. In addition, the vast majority of children (91.6%) obtained more than 10 percent of calories from saturated fat.

-- Children's daily average intake of cholesterol was 143.5mg per 1,000 calories; 43.5 percent higher than the recommended 100mg per 1,000 calories. The average cholesterol intake was highest (176.4mg per 1,000 calories) in the lowest income group of children. Even using the more conservative recommendation of 300 mg of cholesterol a day, nearly one-third of children (31.2%), on average, consumed more than this amount. In addition, half of the children (49.9%) in the poorest households had cholesterol intakes greater than 300mg.

-- Children's daily average sodium intake was 2,861 mg; exceeding the National Academy of Sciences (NAS) recommended upper limit of 2,400mg. In addition, the vast majority of children (85.9%) had sodium intakes that exceeded the NAS' "ideal" standard of 1,800mg.

-- Children's daily average carbohydrate intake was only 49.7 percent of calories; substantially below the 55 percent recommended. In addition, the average intake for fiber, a complex carbohydrate, was 11.5 grams; substantially below the 20 to 30 grams recommended by the National Cancer Institute. Only a very small proportion of children (5.7%) had fiber intakes reaching the minimum amount (20 grams) recommended.

2. While our nation's poorest elementary school-age children (living in households at or below 50 percent of poverty) are consuming too much fat, saturated fat and cholesterol they are also not getting enough to eat. Undernourishment adversely affects a child's physical growth, resistance to infections and academic and behavioral performance in school.

-- The average caloric intake for these children was 1,606 calories, while the national average for children was 1,782 calories. This difference amounts to 176 calories per day or 1,232 calories a week. More importantly, one in three children (34.1%) in the poorest households did not obtain even two-thirds of the Recommended Dietary Allowances (RDA) for calories.

3. Our nation's poorest elementary school-age children (living in households at or below 50 percent of poverty) have inadequate intakes of vitamin A, calcium and iron. These nutrients are essential for the physical growth and mental development of children.

-- One in four children (26.7%) in the poorest households (0 to 50 percent of poverty) did not obtain even two-thirds of the RDA for vitamin A. (The RDA for children is 700 Retinol Equivalents). Only 14.6 percent of children in the nation as a whole had intakes of less than two-thirds of the RDA for vitamin A.

-- Three-fourths of the children (73.9%) in the poorest households had calcium intakes less than 100 percent of the RDA, while only one-third of children from higher income households consumed less than 100 percent of the RDA. (The RDA for calcium is 800 mg). In addition, a greater proportion of the poorest children did not obtain even two-thirds of the RDA for calcium in comparison to children in higher income groups. One in five children (21.1%) in the poorest households had calcium intakes less than two-thirds of the RDA, while the proportion of children in higher income groups ranged from 11.7 to 16.5 percent.

-- Half of the children (49.6%) in the poorest households consumed less than 100 percent of the RDA for iron. (The RDA for iron is 10mg). More importantly, 28.6 percent of these children did not even consume two-thirds of the RDA for iron. Less than 8 percent of children in higher income groups had iron intakes below this level.

II. Elementary School-Age Children's Nutrient Intake From the National School Lunch Program (NSLP)

1. The NSLP plays a major role in the diets of elementary school-age children; especially those living in poverty.

-- On average, 37.9 percent of lunches eaten by children were from the NSLP, with the highest concentration of participation from children with the lowest household incomes. Half of the lunches eaten (52.5%) by children living in poverty were from the NSLP, while only 28.1 percent of the lunches eaten by children in the highest income group were from the NSLP.

2. Children's nutrient intake from the NSLP is higher in fat, saturated fat, and sodium and lower in carbohydrates than children's average daily intakes; which are already too high.

-- On average, elementary school-age children's fat intake from the NSLP was 39.8 percent of calories as compared to their average daily fat intake of 36.4 percent of calories.

-- Children's average intake of saturated fatty acids from the NSLP was 16.5 percent of calories as compared to their average daily saturated fat intake of 14.1 percent of calories.

-- Children's average sodium intake from the NSLP was 1,099.7mg as compared to their one-third equivalent daily intake of 953.6mg.

-- Children's average carbohydrate intake from the NSLP was only 45.6 percent of calories as compared to their daily average intake of 49.7 percent of calories.

RECOMMENDATIONS

1. The U.S. Surgeon General should develop and undertake an aggressive children's nutrition campaign, similar to its anti-smoking campaign, to reduce the dangerously high intakes of fat, saturated fat and cholesterol in the diets of American children.

The U.S. Surgeon General plays a vital role in educating the public and shaping attitudes and behaviors that promote public health. By taking an active and persistent public position on the dangers of smoking, the Surgeon General has been extremely effective in reducing the prevalence of smoking among Americans.

It's time for the Surgeon General to act aggressively to promote the reduction of fat in children's diets. Children are locked into consumption patterns that threaten their future health. Children's high fat diets today will mean that, as adults, many will unnecessarily suffer from heart disease and certain cancers. The poor who suffer disproportionately high rates from these diseases will be particularly hard hit.

2. Congress should mandate that all federally subsidized children's meal programs, especially the National School Lunch Program, conform to its own U.S. Dietary Guidelines of containing no more than 30 percent of calories from fat and no more than 10 percent of calories from saturated fat. Other children's meal programs are the School Breakfast Program, Summer Feeding Program, and Child Care Food Programs, including Headstart.

While USDA and the American School Food Service Association have made efforts to encourage local schools to limit the fat in their lunch programs, a voluntary system will never be effective in ensuring that all programs comply with the recommendations.

In September 1989, California became the first state to require nutrition guidelines limiting the amount of fat and cholesterol in school lunches. It's time that the federal government set limits on fat as recommended in their U.S. Dietary Guidelines. Overconsumption of fat is a problem for all American children, and in particular for low-income children who as adults suffer disproportionately high rates of heart disease, hypertension and obesity. Many poor children rely on these programs to meet a significant portion of their nutritional needs.

3. Congress should mandate disclosure of nutrition information including fat, saturated fat, cholesterol, fiber, sodium and sugar for all meals in federally subsidized children's meal programs, especially the National School Lunch Program, as a condition for cost reimbursement. Other programs are the School Breakfast Program, Summer Feeding Program, and the Child Care Food Programs, including Headstart. This information should be distributed to children, parents, guardians and teachers obtaining their meal from the program.

Virtually every school district plans its meals at least one month in advance. The menus are often printed in the local paper and weekly or monthly menus are sent home with the children. Using USDA's nutrient database handbooks, food service personnel would be able to easily determine a nutrient profile of their meals. This nutrition information would assist parents and teachers steer children to make healthier food choices.

4. USDA should expand the availability of lower fat dairy and meat commodities and high fiber fresh fruits, vegetables and whole grain commodities to all federally subsidized children's meal programs, especially the National School Lunch Program (NSLP). Other programs are the School Breakfast Program, Summer Feeding Program, and the Child Care Food Programs, including Headstart. Specifically, at least 10 percent of the cheese purchased by USDA for the NSLP should be lower fat varieties by the year 1995. These healthier commodities should also be provided to soup kitchens, food pantries and the Temporary Emergency Feeding Assistance Program (TEFAP) that many low-income families must rely on for nourishment. In addition Congress should require nutrition labeling on commodity foods distributed to the NSLP.

USDA commodity policies actually thwart attempts to reduce fat. In an effort to help farmers reduce surpluses and stabilize prices, USDA purchases certain food items and donates them to meal programs. In particular school food service directors depend on these commodities to keep their programs financially sound. About 20 percent of each school meal consists of these commodity foods. Yet the commodities offered to schools include a high proportion of foods that contain high levels of fat.

5. FDA and USDA should take immediate action to remove all barriers to the availability of lower fat products posed by federal standards of identity.

The limited availability of lower fat products can largely be attributed to obsolete federal standards of identity that regulate the composition of many processed foods. The vast majority of nearly 400 standards of identity were established prior to 1940, long before the hazards of a high fat diet were recognized. Many of these standards, particularly those for dairy products -- which children consume in large quantities, require that products contain specified high levels of fat. These requirements can impede the marketing of lower fat foods because they prohibit the use of standardized names, such as "cheddar cheese," when the fat content of the product is reduced.

6. Congress should mandate that FTC require nutrition and health claims in food advertising, especially ads directed toward children, be consistent with claims in food labeling.

More than \$3.5 billion is spent each year on food advertising alone and many of these dollars are spent on advertisements for children's food products. While Congress passed the Nutrition Labeling and Education Act (NLEA) of 1990, which for the first time requires mandatory nutrition labeling and establishes criteria for nutrition and health claims made on the food label, the law does not regulate food advertising. The benefits of the NLEA will easily be undermined if food advertising is permitted to make claims contrary to the requirement of the law. In order to prevent misleading advertising and consumer confusion, nutrition and health claims in food advertising should be consistent with food labels.

7. The nutrition and health status of our nation's children should be monitored on a timely and regular basis. In addition, our nation's poorest children (those living in households at or below 50% of poverty) should be designated as a nutritionally vulnerable group and monitored regularly.

The two major government surveys used to examine the nutrition and health status of our nation's children are DHHS' National Health and Nutrition Examination Survey and USDA's National Food Consumption Survey. Unfortunately these surveys are not conducted on a regular or in a timely manner. In addition, data from these two surveys can not be linked together to provide the most complete picture of the health and nutritional well-being of our children.

8. The centerpiece of children's nutrition education programs should no longer be built around the Basic Four Food Groups. Rather, the focus should be on the U.S. Dietary Guidelines and the National Academy of Sciences' Food and Nutrition Board's nutrition guidelines.

The Basic Four Food Group, the major nutrition education tool used since the 1950s, is out of step with today's children's nutritional needs. Children today consume too much fat, saturated fat, cholesterol and sodium and too little fiber. High consumption of fat, saturated fat and cholesterol have been linked to an increased risk of heart disease, the number one disease that kills Americans.

1990 U.S. Dietary Guideline and the Food and Nutrition Board's nutrition guidelines establish target levels for fat intake and focus on restricting saturated fat, cholesterol, and sodium.

9. The American Medical Association should make all medical schools require a comprehensive course in nutrition and its relationship to health.

Since doctors have frequent contact with children and provide critical health advice to parents, they offer an opportunity to influence parents on making healthy food choices for their families. A doctor whose training permits them to understand the health consequences of a high fat diet will more readily intervene and prescribe that parents change their children's diet.

Notes

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4. Hale, Ellen. "Good nutrition for your growing child," *FDA Consumer*: 21-27, April, 1987.
5. Kwiterovich, P.O. "Biochemical, clinical, epidemiologic, genetic, and pathologic data in the pediatric age group relevant to the cholesterol hypothesis: commentary," *Pediatrics* 78: 349-360, 1986.
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